इंटरनेट मानक

Disclosure to Promote the Right To Information

Whereas the Parliament of India has set out to provide a practical regime of right to information for citizens to secure access to information under the control of public authorities, in order to promote transparency and accountability in the working of every public authority, and whereas the attached publication of the Bureau of Indian Standards is of particular interest to the public, particularly disadvantaged communities and those engaged in the pursuit of education and knowledge, the attached public safety standard is made available to promote the timely dissemination of this information in an accurate manner to the public.

“जानने का अधिकार, जीने का अधिकार”
Mazdoor Kisan Shakti Sangathan
“The Right to Information, The Right to Live”

“पुराने को छोड नये के तरफ”
Jawaharlal Nehru
“Step Out From the Old to the New”

IS 4593 (1968): Test chart for straight-sided presses [PGD 4: Metal Forming Machines]

“ज्ञान से एक नये भारत का निर्माण”
Satyanarayan Gangaram Pitroda
“Invent a New India Using Knowledge”

Act Number 22 of 2005
The Indian Parliament
RIGHT TO INFORMATION

Made Available By
Public.Resource.Org

“ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है”
Bhartṛhari—Nītiśatakam
“Knowledge is such a treasure which cannot be stolen”

BLANK PAGE

BRUTUM FULMEN
IGNORANTIA JURIS NON EXCUSAT
PROTECTED BY COPYRIGHT

IS : 4593 - 1968
(Reaffirmed 1978)

(Reaffirmed 2006)

Indian Standard

TEST CHART FOR STRAIGHT-SIDED PRESSES

(First Reprint JANUARY 1981)

UDC 621.979.621:620.1(084.3)

© *Copyright* 1968

INDIAN STANDARDS INSTITUTION
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

Price Rs 5·00 Gr. 2

June 1968

Indian Standard

TEST CHART FOR STRAIGHT-SIDED PRESSES

Machine Tools Sectional Committee, EDC 11

Chairman	*Representing*
Shri A. R. Iyer	Consolidated Pneumatic Tools (India) Ltd, Bombay
Members	
Shri V. G. Dhayagude (*Alternate* to Shri A. R. Iyer)	
Shri S. K. Agarwal	Textile Machinery Corporation Ltd, 24 Parganas (West Bengal)
Shri V. Jayachandra Babu	P. S. G. Industrial Institute, Coimbatore
Shri K. L. Bajaj	Machine Tool Prototype Factory, Ambarnath
Shri R. M. Apte (*Alternate*)	
Dr S. G. Bhattacharjee	Tata Engineering & Locomotive Co Ltd, Jamshedpur
Shri R. S. Bir	Hindustan Machine Tools Ltd, Bangalore
Shri M. Rangashai (*Alternate*)	
Shri T. N. Bose	Prototype Production and Training Centre, New Delhi
Prof A. K. De	Indian Institute of Technology, Bombay
Shri S. K. Dev	The Jay Engineering Works Ltd, Calcutta
Lt-Col H. K. Dham	Directorate of Engineering (R & D), New Delhi
Maj R. N. Srivastava (*Alternate*)	
Director of Fleet Maintenance	Directorate of Fleet Maintenance, New Delhi
Shri R. K. Gejji	Directorate General of Technical Development, New Delhi
Shri R. N. Basu (*Alternate*)	
Shri A. K. Ghosh	Heavy Engineering Corporation Ltd, Ranchi
Shri S. K. Ganguli (*Alternate*)	
Shri J. D. Hingorani	Army Headquarters, New Delhi
Lt-Col M. S. Krishnamurthy (*Alternate*)	
Shri N. K. Joshi	Kirloskar Brothers Ltd, Kirloskarvadi
Shri V. M. Hardikar (*Alternate*)	
Shri P. C. Kapoor	Directorate General of Supplies and Disposals, New Delhi
Shri A. N. Kampani (*Alternate*)	
Shri W. C. Kawatra	Atlas Engineering Industries, Batala
Shri S. S. Kirloskar	The Mysore Kirloskar Ltd, Yantrapur (Harihar)
Shri N. C Sukharamwala (*Alternate*)	
Shri M. W. Lalchandani	Meghraj Machines, Baroda
Shri M. V. Mantri	Cooper Engineering Ltd, Chinchwad, Poona
Shri D. H. Nagre (*Alternate*)	

(*Continued on page* 2)

INDIAN STANDARDS INSTITUTION
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

(*Continued from page* 1)

Members	*Representing*
Shri Prem Prakash	National Physical Laboratory (CSIR), New Delhi
Shri P. C. Jain (*Alternate*)	
Shri R. V. Ramiah	Central Machine Tool Institute, Bangalore
Shri B. S. N. Rao	Institution of Engineers (India), Bombay
Shri R. K. Ray	Railway Board, New Delhi
Shri C. B. Saran	Ex-Cell-O India Ltd, Bombay
Shri A. C. Choksi (*Alternate*)	
Shri C. V. Sastry	Tata Engineering & Locomotive Co Ltd, Chinchwad, Poona
Shri L. N. Tandon (*Alternate*)	
Shri W. H. Siddiqui	The Praga Tools Ltd, Secunderabad
Shri R. N. Singhal	Central Mechanical Engineering Research Institute (CSIR), Durgapur
Shri T. S. Chennabasavan (*Alternate*)	
Shri V. Smeiser	Francis Klein & Co Private Ltd, Calcutta
Shri I. S. Somashekar (*Alternate*)	
Shri M. V. Patankar, Director (Mech Engg) (*Secretary*)	Director General, ISI (*Ex-officio Member*)

Metal Working Machines, Such as Presses, Shears Subcommittee, EDC 11 : 8

Convener	
Shri H. C. Gupta	Godrej & Boyce Mfg Co Pvt Ltd, Bombay

Members	
Shri Y. R. Patole (*Alternate* to Shri H. C. Gupta)	
Shri R. N. Basu	Directorate General of Technical Development, New Delhi
Shri S. V. Bhatia	Larsen & Toubro Limited, Bombay
Shri R. S. Bir	Hindustan Machine Tools Ltd, Bangalore
Shri M. Rangashai (*Alternate*)	
Shri J. Lawson	Oriental Electric and Engineering Co, Calcutta
Shri R. Rajagopalachari	Integral Coach Factory, Perambur, Madras
Shri V. M. Rao	The K. C. P. Ltd, Madras
Shri K. Satyanarayana (*Alternate*)	
Shri K. M. Shah	The Premier Automobiles Ltd, Bombay
Shri G. D. Thakoor	The Oriental Metal Pressing Works Private Ltd, Bombay
Shri J. P. Velkar (*Alternate*)	
Shri N. E. Warner	Scottish Indian Machine Tools Limited, Bombay

Indian Standard

TEST CHART FOR STRAIGHT-SIDED PRESSES

0. FOREWORD

0.1 This Indian Standard was adopted by the Indian Standards Institution on 22 April 1968, after the draft finalized by the Machine Tools Sectional Committee had been approved by the Mechanical Engineering Division Council.

0.2 Straight-sided refers to the press frame construction where in the uprights (vertical) enclose the left and right sides of die space.

0.3 In preparing this standard, assistance has been derived from the book 'Testing Machine Tools' by Dr D. Schlesinger. 1961 Ed 6, published by the Machinery Publishing Company Ltd, London.

0.4 The test chart has been so prepared as to provide a convenient basis for the preparation of a proforma for preparing test certificate.

0.5 For the correct interpretation of the results, it is necessary to lay down specifications for measuring instruments, like straightedges, mandrels with taper shanks, mandrels between centres and dial gauges. Mandrels between centres and mandrels with taper shanks have been covered in IS : 2063-1962*. The following specifications for measuring instruments have already been published:

IS : 2092-1962 Dial gauges
IS : 2103-1962 Engineer's squares
IS : 2220-1962 Steel straightedges
IS : 2554-1963 Cast iron angle plates
IS : 2285-1963 Cast iron surface plates

0.6 For the installation of the machines before testing, warming up of spindles and other moving parts, description of measuring methods and recommended precision concerning testing equipment, a reference shall be made to IS : 2063-1962*.

0.7 The sequence in which the tests have been given in the standard is not obligatory. If necessary, the sequence may be changed to suit the convenience of the inspector.

---

*Code of testing machine tools.

0.8 Practical tests for checking working accuracy should be carried out with the finishing cuts and not with the roughing cuts which are liable to generate large cutting forces.

0.9 Press capacity has been expressed by the unit of force and this standard uses the term 'tonne-force' and the symbol 't' to indicate 1 000 times the unit of force expressed by the 'kgf'.

0.10 In reporting the result of a test made in accordance with this standard if the final value, observed or calculated, is to be rounded off, it shall be done in accordance with IS : 2-1960*.

1. SCOPE

1.1 This standard prescribes the limits of accuracy and procedures for carrying out the tests for straight-sided presses.

2. TESTING INSTRUMENTS

2.1 The test instruments shall be of the approved type and shall be calibrated at 20°C.

3. ACCURACY REQUIREMENTS

3.1 The tests to be carried out, the instruments required, the maximum permissible errors and the manner of carrying out the tests shall be as detailed in the test chart.

3.2 The tests shall be carried out at the manufacturer's works.

3.3 Before carrying out the tests, the machines shall be levelled in accordance with the manufacturer's instructions which should be supplied; in sufficient detail with each machine.

---

*Rules for rounding off numerical values (*revised*).

TEST CHART FOR STRAIGHT-SIDED PRESSES

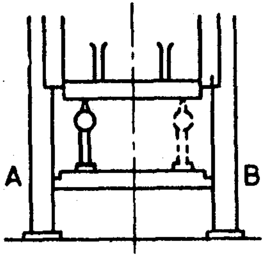
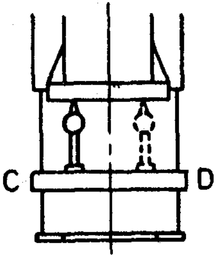
Type... Order No.. Customer...

Machine No.................................... Date... Inspector...

Sl No.	Test Item	Figure	Measuring Instruments	Permissible Error in mm	Actual Error	Instructions for Testing
(1)	(2)	(2)	(4)	(5)	(6)	(7)
1	Flatness of bed, bolster and slide face in plane through the centre of the frame and in plane perpendicular	—	Precision spirit level	0·02/300 mm	...	Spirit level placed on the bed surface in both the directions and readings noted.

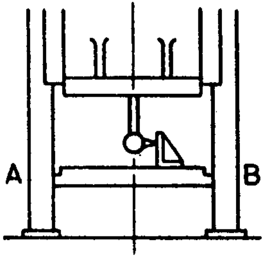
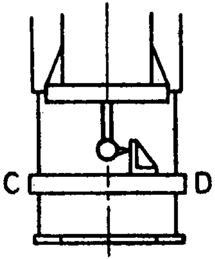
(*Continued*)

TEST CHART FOR STRAIGHT-SIDED PRESSES — *Contd*

Sl No.	Test Item	Figure	Measuring Instruments	Permissible Error in mm	Actual Error	Instructions for Testing
(1)	(2)	(3)	(4)	(5)	(6)	(7)
2	Bed surface parallel with slide face	 	Dial Indicator having base of stand 200 to 250 mm long	In planes *AB* and *CD* up to 250t capacity: 0·03/300 mm over 250t capacity: 0·05/300 mm	… …	Set maximum slide stroke down, and adjustment down. Dial indicator mounted on the bed, test point brought into contact with slide face as far as out as possible in planes *AB* and *CD*. Difference in dial indicator readings noted.

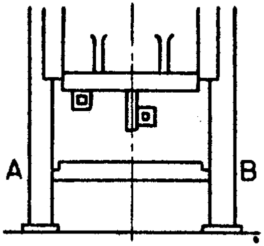
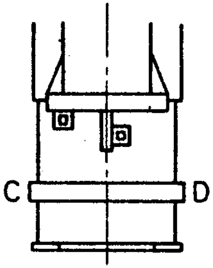
(*Continued*)

TEST CHART FOR STRAIGHT-SIDED PRESSES — *Contd*

SL No.	TEST ITEM	FIGURE	MEASURING INSTRUMENTS	PERMISSIBLE ERROR IN mm	ACTUAL ERROR	INSTRUCTIONS FOR TESTING
(1)	(2)	(3)	(4)	(5)	(6)	(7)
3	Slide motion square with bed surface	 	Dial indicator, engineers square (blade length of square to be commensurate with the press stroke)	In planes *AB* and *CD* up to 250t capacity: 0·03/300 mm over 250t capacity: 0·05/300 mm	... ...	Set maximum slide stroke and adjustment down. Square placed on the bed and dial indicator attached to the slide test point being in contact with the square in plane *AB* and *CD*. The slide moved and readings during one stroke taken.

(*Continued*)

TEST CHART FOR STRAIGHT-SIDED PRESSES — *Contd*

SL No.	TEST ITEM	FIGURE	MEASURING INSTRUMENTS	PERMISSIBLE DEVIATION IN mm	ACTUAL ERROR	INSTRUCTIONS FOR TESTING
(1)	(2)	(3)	(4)	(5)	(6)	(7)
4	*Hole receiving punch shank square with slide face	 	Test mandrel with parallel shank for reception in slide. Box type precision spirit level.	In planes *AB* and *CD* up to 250t capacity: 0·03/300 mm over 250t capacity: 0·05/300 mm	… …	Test mandrel held inside the slide opening and spirit level placed against the test mandrel in Plane *AB* as shown in the figure and readings noted. Now spirit level placed on the slide face in the same plane and readings noted. Permissible deviation shall be the different in two readings. Repeat the procedure in plane *CD*.

NOTE — Plane *AB* is the plane passing through the centre of frame.
Plane *CD* is the plane perpendicular to the plane passing through the centre of the plane.

*Measurement of acceptance test is not necessary where slide face does not have the punch shank receiving hole.

INTERNATIONAL SYSTEM OF UNITS (SI UNITS)

Base Units

Quantity	*Unit*	*Symbol*
Length	metre	m
Mass	kilogram	kg
Time	second	s
Electric current	ampere	A
Thermodynamic temperature	kelvin	K
Luminous intensity	candela	cd
Amount of substance	mole	mol

Supplementary Units

Quantity	*Unit*	*Symbol*
Plane angle	radian	rad
Solid angle	steradian	sr

Derived Units

Quantity	*Unit*	*Symbol*	*Conversion*
Force	newton	N	1 N = 1 kg.1 m/s^2
Energy	joule	J	1 J = 1 N.m
Power	watt	W	1 W = 1 J/s
Flux	weber	Wb	1 Wb = 1 V.s
Flux density	tesla	T	1 T = 1 Wb/m^2
Frequency	hertz	Hz	1 Hz = 1 c/s (s^{-1})
Electric conductance	siemens	S	1 S = 1 A/V
Pressure, stress	pascal	Pa	1 Pa = 1 N/m^2

INDIAN STANDARDS INSTITUTION

Manak Bhavan, 9 Bahadur Shah Zafar Marg, NEW DELHI 110002
Telephones : 26 60 21, 27 01 31 **Telegrams : Manaksanstha**

Regional Offices:

			Telephone
Western	: Novelty Chambers, Grant Road	BOMBAY 400007	37 97 29
Eastern	: 5 Chowringhee Approach	CALCUTTA 700072	23-08 02
Southern	: C. I. T. Campus, Adyar	MADRAS 600020	41 24 42

Branch Offices:

'Pushpak', Nurmohamed Shaikh Marg, Khanpur	AHMADABAD 380001	2 03 91
'F' Block, Unity Bldg, Narasimharaja Square	BANGALORE 560002	2 76 49
Gangotri Complex, Bhadbhada Road, T.T. Nagar	BHOPAL 462003	6 27 16
22E Kalpana Area	BHUBANESHWAR 751014	5 36 27
Ahimsa Bldg, SCO 82-83, Sector 17C	CHANDIGARH 160017	2 83 20
5-8-56C L. N. Gupta Marg	HYDERABAD 500001	22 10 83
D-277 Todarmal Marg, Banipark	JAIPUR 302006	6 98 32
117/418 B Sarvodaya Nagar	KANPUR 208005	8 12 72
Patliputra Industrial Estate	PATNA 800013	6 28 08
Hantex Bldg (2nd Floor), Rly Station Road	TRIVANDRUM 695001	32 27

Reproduced by Reprography Unit, ISI, New Delhi